DOCUMENT RESUME

ED 061 889 HE 002 956

| | |
|---|---|
| AUTHOR | Gunne, Manuel G.; Leslie, Larry L. |
| TITLE | Exceptional Graduate Admissions at the Pennsylvania State University. |
| INSTITUTION | Pennsylvania State Univ., University Park. Center for the Study of Higher Education. |
| PUB DATE | Mar 72 |
| NOTE | 47p. |
| AVAILABLE FROM | Center for the Study of Higher Education, 101 Rackley Building, The Pennsylvania State University, University Park, Pennsylvania 16802 |
| EDRS PRICE | MF-$0.65 HC-$3.29 |
| DESCRIPTORS | Academic Achievement; *Admission Criteria; *Disadvantaged Youth; Educationally Disadvantaged; Educational Opportunities; *Graduate Study; *Higher Education; *Open Enrollment |

ABSTRACT

This document analyzes and evaluates the exceptional graduate admissions program at Pennsylvania State University as instituted in 1970. Under this program, traditional admissions criteria are dropped to enable disadvantaged students to attend graduate school. (A previous survey of the Council of Graduate Schools showed that 59% of the member graduate schools have adopted similar programs.) On the basis of this study, the changes in graduate admissions policies at Penn State do not appear to adversely affect the quality of graduate programs. It further appears that the individual departments are capable of selecting students who fail to meet certain departmental standards, but nonetheless perform acceptably in the programs. Traditional graduate admissions policies do not appear to serve their ostensible purpose. They do not seem to afford substantial efficiencies to society by restricting graduate education to those most likely to benefit; rather, they have historically restricted persons from certain social, racial, or economic backgrounds. It would appear that institutions of higher education are coming to that conclusion. In the absence of some otherwise compelling evidence, equal consideration of all applicants would seem to be a wise policy. (HS)

ED 061889

# Exceptional Graduate Admissions at The Pennsylvania State University

Manuel G. Gunne

Larry L. Leslie

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY.

HE 002 956

Center for the Study of Higher Education
Report No. 15

March 1972

The Pennsylvania State University
University Park, Pennsylvania

# Table of Contents


Introduction 1

Selected Efforts 5
The Penn State Case 7

The Effects of Changed Criteria or Standards 9

Selected Efforts 9
The Penn State Case 11

Method of The Study 11

Procedure 13
Instrumentation 15
Results 17

Summary 22

t-Tests 22
Factor Analysis 24

Conclusions 25

Appendix A 29
Appendix B 32
Appendix C 37

Bibliography 43

Notes on the Authors 45

# INTRODUCTION

Until quite recently the admissions criteria for graduate schools conformed closely to that of the earlier established undergraduate patterns. The determinants of selection were past academic performance and achievement scores on entrance examinations. The rationale behind these two criteria was that they were predictive of future academic success and that applicants with the greatest chance for success should be admitted.

There is some basis for the first assumption, although in general the evidence is meager. High school rank has been shown to be the best single predictor of success in college; however, substantial research relating high school performance and test achievement scores to college success indicates that in absolute terms these criteria by no means insure impressive results.

Such practices have contributed to a situation wherein approximately 40 percent of all college freshmen never receive a baccalaureate degree,[1] and as many as 50 percent of the graduate students in all but the top-ranked universities never complete

---

[1]Robert E. Iffert, *Retention and Withdrawal of College Students*, Bulletin 1 (Washington, D.C.: U.S. Office of Education, 1958).

their doctoral programs.[2] Admissions practices at both levels of higher education were severely criticized by Campbell[3] and Marston[4] in two articles in a recent issue of the *American Psychologist*. A national study of attrition of doctoral candidates showed that even among graduate students with a master's degree, almost 33 percent never attain the doctorate.[5] In fact, in a study of educational research training programs at the graduate level, Fleury and Cappolluzzo reported that entrance requirement variables effectively predicted success only 15 percent of the time, leaving 85 percent still unaccounted for.[6] These circumstances suggest that if the prediction of success is indeed possible at all, other criteria may be more promising.[7]

---

[2]Ann M. Heiss, *Challenges to Graduate Schools* (San Francisco: Jossey-Bass, Inc., 1970) p. 102.

[3]David C. Campbell, "Admissions Policies: Side Effects and Their Implications," *American Psychologist* 26 (1971): 636-48.

[4]Albert R. Marston, "It Is Time to Reconsider the Graduate Record Examination," *American Psychologist* 26 (1971): 653-6.

[5]Allen Tucker, David Gottlieb, and John Pease, *Attrition of Graduate Students at the Ph.D. Level*, Publication 8 (Michigan State University: Office of Research & Development and the Graduate School, 1964).

[6]Bernard J. Fleury and Emma M. Cappolluzzo, *Educational Research Training Programs: Requirements for Admission* (University of Massachusetts: Massachusetts School of Education, 1969).

[7]Marston, "Graduate Record Examination," p. 654.

At many institutions and in various ways graduate admissions procedures have changed, partially in recognition of the poor predictive powers of the traditional criteria, and even more vitally in an attempt to remedy social injustices. Clearly, institutions have begun to move away from traditional admissions practices, at least for some students in some institutions. The beneficiaries have often been disadvantaged students, especially blacks,[8] who have been welcomed by institutions intent upon altering their elitist images.

Whether as a result of an effort to correct a social and moral injustice, to ease campus unrest and rebellion, to erect a facade of concern, or to try to be "where it's at," many colleges and universities have begun to admit disadvantaged students in increasing numbers to their graduate programs, under other than traditional criteria. The prospects for success (degree attainment) for many of these policies which are exceptions to the traditional may be considered highly limited, but many institutions are taking the risks, with little evidence of adverse effects.[9]

---

[8]Lawrence C. Howard, *Graduate Education for the Disadvantaged and Black-Oriented University Graduates* (Washington, D.C.: Council of Graduate Schools in the United States, 1968).

[9]Council of Graduate Schools in the United States, *Programs for Disadvantaged Students in Graduate Schools* (Princeton, N.J.: Educational Testing Service, 1970) p. 3.

These institutions are forming policy in light of the realization that there is no such thing as a culture-free test and that nontraditional, even unconventional, criteria may be more desirable. The American College Testing Program has responded by seeking to design criteria batteries that include evidence of leadership ability, indications of latent motivation and learning capabilities, and most importantly the opinions of knowledgeable instructors and advisors.

The Council of Graduate Schools has surveyed the extent and nature of institutional adjustment to new criteria and has noted that of its 287 member colleges and universities, at least 150, or approximately 59 percent of the respondents to its survey, reported making some provision for exceptional admissions. The Council reports this to be a national upsurge in exceptional admissions to American graduate schools.

The Council study, which is the most comprehensive to date, reports the following pertinent findings:

> Many graduate schools report ten or fewer disadvantaged students enrolled. The number of such students has increased substantially in recent years.
>
> Most of the special procedures and programs were established in 1967 or later. Few changes have been made or are planned.
>
> Substantial numbers of graduate schools waive or liberalize the admissions requirements of previous scholastic records and test scores. Letters of recommendation are the most frequently used additional criteria for evaluating the applicants.

> Most of the graduate schools reporting special procedures or programs feel that it is too early to evaluate their effectiveness. Others reported that student achievement has been good or excellent and that the rate of attrition has been low.[10]

## Selected Efforts

Particular efforts by individual institutions are worthy of special mention. The University of California at Los Angeles, for example, purposely seeks out high risk applicants who clearly do not meet traditional requirements and selects its disadvantaged students under a set of admissions criteria obviously quite different from those normally employed.[11] Harvard, Yale, and Columbia run a coordinated intensive summer studies program for similarly disadvantaged but potentially able applicants. These students are selected partially on the basis of a formal application and a transcript of college work, but more consideration is given to a statement of educational aims, a writing sample, an interview, and especially three faculty recommendations. Motivation and desire are prominent factors considered in these acceptance decisions.[12]

---

[10] Ibid.

[11] Howard, *Graduate Education*.

[12] Harold M. Stahmer, *The Disadvantaged Student in Graduate School*, The Harvard-Yale-Columbia Intensive Summer Studies Programs (Washington, D.C.: Council of Graduate Schools, 1968).

Wisconsin utilizes a multidisciplinary program approach for high risk unadmissibles who have been accepted to its graduate school with credentials well below those usually prescribed. After admission, certain helpful steps are taken to improve the student's chances of success.

> Ordinarily a specific faculty member should agree to counsel each student and the department should be prepared to offer a reduced course load, pass-fail grading in some subjects, tutoring, and other special procedures which insure that deficiencies in undergraduate preparation do not prevent the student from progressing toward his degree.[13]

In an attempt to find criteria more appropriate to the culturally and socially different minorities, Oberlin interviews black applicants who are chosen for graduate admissions only after rating them on their 'hipness,' a concept made up of competitiveness, high motivation, and self-reliance.[14]

The University of Cincinnati is admittedly unimpressed with undergraduate grade point averages, and looks primarily at the latter part of a student's undergraduate experiences for evidence of problem-solving ability.[15] The students selected are requested

---

[13]Donald Carlisle, *The Disadvantaged Student in Graduate School Master's and Doctoral Degree Programs in Predominately Non-Negro Universities* (Los Angeles: University of California, 1968), p. 11.

[14]William G. Davis and Gordon A. Welty, *The Old System and the New College Students* (Oberlin, Ohio: American College Personnel Association, 1970).

[15]Howard, *Graduate Education*.

to attend a summer institute, not unlike the Harvard-Yale-Columbia program, at which many services similar to those of the Wisconsin program (tutoring, reduced load, and pass-fail) are made available. In reference to problem-solving ability, Cincinnati reports that students who asked for the most help turned out to be the most successful in the program, low gpa's notwithstanding.

## The Penn State Case

Like so many other concerned institutions, The Pennsylvania State University has changed its procedures for admitting applicants to its graduate programs. Prior to 1970, all applications were controlled centrally by the graduate school. Graduation from an accredited baccalaureate-granting institution and at least a 2.5 junior-senior grade point average were the minimum requirements for all applicants. Ordinarily, the graduate school automatically rejected any applications which did not meet these two basic requirements. All minimally acceptable applications were then forwarded to the appropriate departments where, subject to facility limitations, decisions were made according to the criteria developed by each department at its own prerogative.

In the "other-than-ordinary" cases, a department would take the initiative in admitting a student who was known to possess some compensating features or interests. The procedure was for the department to ask the graduate school office to

forward a particular application in spite of its obvious disqualifying grade point average. Such procedures were not common, however.

In an attempt to decentralize admissions decisions and to make some provision for disadvantaged applicants, the Graduate Admissions Committee formulated a policy, late in 1969, under which all applications would be forwarded directly to the various departments without the graduate school exercising any judgment other than that of determining whether an applicant had attended an accredited institution. No minimum grade point average would be necessary and departments were openly urged to admit some disadvantaged students who ordinarily would have been rejected under the traditional critera. Departments were further encouraged to make a special effort to locate potentially able disadvantaged students whose records might initially reflect apparent weaknesses in their backgrounds.

In this same report the Graduate Admissions Committee made the following charge to the Dean of the Graduate School:

> For evaluation of the policy for exceptional admissions, the Graduate School shall maintain an annual survey of the effects of exceptional admissions, drawing data from official transcripts and from members of the graduate faculty with the use of the Recommendation Report form appended in this Committee report. Comparisons will be made and reported of students admitted in exception to normal criteria and comparable students who did meet those criteria.[16]

---

[16]"Graduate School Bulletin," (University Park, Pennsylvania: The Pennsylvania State University, May 2, 1969) pp. 5-6.

Such a charge is not unusual. Institutions nation-wide have sought to determine whether the quality of their programs have suffered as a result of exceptional admissions, but there is no published evidence that program quality has diminished noticeably. The Council of Graduate Schools' report supports this point. Although most institutions consider that "it is too early to evaluate their [exceptional admissions program] effectiveness, others report that student achievement has been good -- even excellent -- and that the rate of attrition has been low."[17] Appraisals of individual programs have yet to reach the journals in large numbers; however, a few such reports have been forthcoming.

## Selected Efforts

In the special University of California at Los Angeles program, only 25 percent of the exceptionally admitted students failed to successfully complete their work. (Recall that the national study by Heiss revealed a comparable 50 percent figure.)[18] A comparison of the students who persisted revealed that the entering grade point average requirement appeared rather

---

[17]Council of Graduate Schools in the United States, *Programs for Disadvantaged*.

[18]Heiss, *Challenges to Graduate Schools*.

insignificant when other factors and attributes were taken into account.[19] An almost random relationship was reported to exist between entering gpa and later academic achievement. Those who failed the program did not necessarily have low gpa's at the time of admission.

The notably intensive Harvard-Yale-Columbia summer program showed especially encouraging results in its first two years. As many as 59 percent of the 1966 group continued their graduate work and 71 percent of the 1967 applicants were progressing satisfactorily in that program.[20]

Perhaps no institution surpasses Oberlin in its efforts to devise nonstandard criteria for admission to graduate school. As intimated earlier, the Oberlin research compared three groups of students who differed on the basis of traditional criteria (including gpa) and a concept of 'hipness' (competitiveness, high motivation, and self-reliance). Students in the first group met the traditional criteria but they were not hip. The second group of students met the traditional criteria while also being hip. Students in the third group did not meet the traditional criteria, but they were, by definition, hip. Oberlin researchers reported that, "At the end of the first semester, there was no appreciable

---

[19]Carlisle, *The Disadvantaged Student*, p. 19.

[20]Stahmer, *The Disadvantaged Student*.

difference in the distinction of grade point average among the three groups."[21]

## The Penn State Case

The discussion thus far has described the results of efforts, nationally to evaluate innovative programs for disadvantaged students in graduate schools. The Pennsylvania State University has not sought to rival Oberlin's admissions criteria in originality. That aspect of the issue is left to each department. The University no longer has one all-pervading admissions policy; it is now the complete prerogative of each department to establish its own criteria for exceptional, as well as regular admissions. The focus of this study, however, is not on the admissions critera, but on the comparative success of those students admitted under any exceptional admissions guidelines.

## Method of the Study

For the purposes of this study the exceptionally admitted students were separated into two subgroups. First, there were those who were exceptional in the traditional sense, since they did not meet the previous University-wide minimum upper-division undergraduate grade point average of 2.5. Second were those who possessed a grade point average above 2.5, but who were still

---

[21]Davis and Welty, *The Old System.*

below the required minimum for the department to which they had applied. This group also included those exceptionally admitted students who failed to meet other particular department criteria, e.g., course prerequisites, special entrance tests, etc.

These two subgroups of exceptionally admitted students were compared to a group of randomly selected traditionally admitted students in line with six hypotheses. These hypotheses, stated here in the null convention for the sake of convenience, were tested to ascertain whether any difference existed between these two subgroups of exceptionally admitted students and a group of traditionally admitted (control) students. The six hypotheses were:

1. There are no differences in student performance between students who are admitted to graduate programs with less than a 2.5 grade point average in their junior-senior undergraduate years and those who are admitted with greater than a 2.5 grade point average.

2. There are no differences within departments in student performance between students who are admitted to graduate programs with less than 2.5 grade point averages in their junior-senior years and those who are admitted with greater than 2.5 grade point averages.

3. There are no differences within colleges in student performance between students who are admitted to graduate programs with less than 2.5 grade point averages in their junior-senior years and those who are admitted with greater than 2.5 grade point averages.

4. There are no differences in student performance

between students who are admitted to graduate programs on the basis of special exceptions to department admissions standards and those who are not special exceptions to department standards.*

5. There are no differences within departments in student performance between students who are admitted to graduate programs on the basis of special exceptions to department admissions standards and those who are not special exceptions to department standards.*

6. There are no differences within colleges in student performance between students who are admitted to graduate programs on the basis of special exceptions to department admissions standards and those who are not special exceptions to department standards.*

## Procedure

Using rosters of new graduate students at The Pennsylvania State University for the summer and fall terms of 1970 -- terms when most new students are admitted -- the evaluators identified students who could be considered exceptional admits since they failed to meet the old University-wide requirement of a 2.5 minimum gpa or the particular acceptance criteria of the various departments of the University. Department admissions requirements vary considerably and may include different combinations of special tests, standardized tests, course or degree specifications, letters of recommendation, and prescribed grade point average requirements ranging from the old University-wide mimimum 2.5 to a high of 3.0.

---

*Since all departments maintained a gpa standard of at least 2.5, the "below 2.5 groups" of the first three hypotheses are included in the "below departmental standards groups" of the latter three hypotheses.

An examination of the summer and fall 1970 rosters of new graduate students disclosed 110 students who were admitted under exceptional circumstances, i.e., either their undergraduate junior-senior grade point average was less than 2.5 or it was below the grade point average required by the department to which they were applying. Although most current research on exceptional admissions focuses on blacks or other minority groups, the subjects for this study were not selected on the basis of race, religion, or national origin, although foreign students were omitted. Adequate records were available for only 99 of these students who were split into the two subgroups.* The first subgroup contained those students admitted with a grade point average below 2.5, while the second subgroup included those students whose grade point averages were below individual department standards (which were never below a 2.5 gpa; thus the second subgroup contains the first subgroup).

The total group of students was also subdivided into college and department categories for hypothesis testing. However, since only six colleges had admitted fifteen or more exceptional students and only five departments had admitted five or more exceptional students, only colleges and departments which had at least these numbers were compared.

---

*There were eleven students who applied for exceptional admission, were accepted, but did not appear to begin their graduate work.

Stratified random samples by college and department were then drawn of those new admits, appearing on the same summer and fall rosters, whose upper division grade point averages were above all department admissions criteria. These students comprised the control group. A sample of 115 such control students who met their department requirements were randomly drawn. The sampling plan was to include enough students within each college and department for meaningful comparisons. With the 99 "experimental" students, the total number of subjects originally identified for the study was 214.

## Instrumentation

The instrument was an investigator-designed questionnaire, modified from the Graduate School's Recommendation Report on the "Applicant for Admission" form (see Appendix A). It included the student's name, a section for the faculty member to indicate his degree of familiarity with the student to be evaluated, and eleven items relating to the student's personality and performance as a graduate student. (A twelfth item asked whether, in the opinion of the faculty member, the University had erred in admitting the student identified on the questionnaire.)

The eleven items concerned such areas as the student's knowledge of and ability to use the basic research techniques in his field, his self-reliance and independence in scholarly work, his motivation toward scholarly work, his emotional stability and

maturity, and his skill in expressing himself -- both in speech and writing.

Faculty members were asked to rank the students in comparison to other recent graduate students, at the same stage in their programs, who had worked on equivalent degrees in that department. A brief item-statement, e.g., "mastery of the fundamental knowledge in his major field," was presented and then followed by a nine-interval percentile scale. The scale ranged from the bottom tenth percentile to the top tenth percentile with a twenty percentile (41-60) midpoint. Based upon his familiarity with the student, the faculty member was asked to check a percentile for each item, which, in his judgment, best described that student.

The questionnaire required only a few minutes to fill out and most returns were complete. In all, 428 copies of the instrument (2 for each of the 214 students) were circulated to selected faculty members who were most familiar with the students in the study. The faculty members were considered "most familiar" if they had been advisors to the students and/or had instructed them in one or more classes. Faculty members were not told the specific purpose of the study or which students had been exceptionally admitted.

Utilizing data collection techniques designed by Leslie,[22]

---

[22]Larry L. Leslie, "Obtaining Response Rates to Long Questionnaires," *Journal of Educational Research* (1970): 345-50.

395 questionnaires (92 percent) were returned. Of these, 346 (81 percent) contained usable data. For most students there were two usable responses, but for the others only one questionnaire had been returned. At this point data were available for 74 experimental subjects (below department requirements) and 111 control subjects (above all requirements) -- 185 subjects in all. The data were then compared according to the six hypotheses.

The plan for data analysis was designed to provide the graduate school and appropriate faculty committee with the information necessary for evaluation and decision making. Implicit in the charge to the graduate dean was the assumption that students admitted as exceptions in any given year would not differ markedly from those of subsequent years; thus, the true population sampled extended beyond the 1970 summer and fall terms. Therefore, the use of inferential statistics was deemed appropriate -- the inference being applied to future exceptionally admitted students. At the same time the most noteworthy findings are the simple comparisons of raw data in the forms of means and standard deviations. This is so because the magnitude of differences between regular students and exceptionally admitted students is far more important than whether or not some difference exists.

## Results

When the mean scores for the below 2.5 exceptional admissions students were compared with those of the traditional admits, the

traditionals had higher scores on ten of the eleven items (see Appendix A, pages 2 and 3). The differences ranged from .03 to .60 (with an average of .28). The exceptionally admitted students' single higher mean score was higher by a difference of .16 on Item 8.

As a total group the mean scores for the exceptional admissions students were not lower than those of the traditional admits by more than .30 on eight of the eleven items -- a small difference on a one-to-ten scale. As a matter of fact, on two of the eleven items (nos. 8 and 9) the mean scores for the exceptional admits were higher than those of the traditionally admitted students (see Table I). On the single item (no. 2) which had a difference greater than .30, the variance was only .52. Since standard deviations were of the order of 2.0, these differences were small indeed.

The differences within departments varied more than those between the two major groups taken totally. Departments I and V contributed no subjects (missing returns) for the comparison of below 2.5 experimental students with the control group. Department II favored the regularly admitted students on seven items with mean score differences ranging from .43 to 2.18. The four items favoring the experimentals had differences ranging from .03 to .53. Departments III and IV had an insufficient number of observations for valid calculations. However, in department VI,

TABLE I

MEANS AND STANDARD DEVIATIONS FOR THE ELEVEN ITEMS BY THE EXPERIMENTAL SUB-GROUP AND THE CONTROL GROUP

(HYPOTHESES 1 and 4)

| Items* | (Below 2.5) $X_1$ N = 90 | | (Below dept. standards) $X_2$ N = 148 | | (Regular admits) Control N = 222 | |
|---|---|---|---|---|---|---|
| | Means | SD | Means | SD | Means | SD |
| 1 | 5.95 | 2.04 | 6.04 | 2.11 | 6.34 | 1.92 |
| 2 | 5.44 | 1.99 | 5.52 | 2.16 | 6.04 | 1.94 |
| 3 | 5.88 | 2.18 | 6.02 | 2.27 | 6.22 | 2.00 |
| 4 | 6.37 | 2.21 | 6.35 | 2.24 | 6.60 | 1.98 |
| 5 | 6.47 | 2.04 | 6.41 | 2.14 | 6.66 | 1.97 |
| 6 | 6.74 | 1.72 | 6.65 | 1.93 | 6.84 | 1.90 |
| 7 | 5.95 | 2.05 | 6.07 | 2.04 | 6.35 | 2.01 |
| 8 | 6.82 | 1.93 | 6.90 | 1.81 | 6.66 | 1.96 |
| 9 | 6.52 | 1.79 | 6.59 | 1.75 | 6.55 | 2.00 |
| 10 | 6.22 | 2.07 | 6.27 | 2.03 | 6.29 | 2.02 |
| 11 | 6.22 | 2.25 | 6.37 | 2.25 | 6.63 | 2.13 |

*Items are identified in Appendix A.

the combined "all other departments" category, the exceptionally admitted students were favored on seven of the eleven items with a range of .03 to .36. The four items favoring the control group ranged from .01 to .30. These are extremely small differences.

When the two subgroups of experimentals were combined for a within department comparison, the results were generally the same as those found when the below 2.5s were taken separately. The controls were favored somewhat in most distinct departments while the experimentals predominated in the combined "other departments" category. Both differences spanned a small range somewhat like the University-wide comparison. Department IV, however, showed a dramatic switch when the total group of experimentals (as opposed to the below 2.5s only) were compared with the controls. In the former instance there was a 9:2 ratio favoring the controls, while in the latter case an 8:3 ratio favored the experimentals although with a much smaller range of differences (see Table II).

The within college differences between the below 2.5 experimentals and the controls disclose some interesting findings. Colleges III (10:1 ratio) and VI (8:3) decisively favored the controls. Colleges IV (11:0) and V (9:2) favored the experimentals. And colleges I (6:5) and II (7:4), although favoring the controls, were more equally balanced. The number of subjects for the experimental group was too small to consider for college VII, the

TABLE II

MEANS AND STANDARD DEVIATIONS FOR THE ELEVEN ITEMS BY THE EXPERIMENTAL SUBGROUPS AND THE CONTROL GROUP (HYPOTHESES 2 and 5)

| | DEPARTMENT II** | | | | DEPARTMENT VI** | | | | DEPARTMENT II*** | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Items* | $X_1$ | N=12 | C | N=38 | $X_1$ | N=74 | C | N=108 | $X_2$ | N=12 | C | N=38 |
| | $\bar{X}$ | SD | $\bar{X}$ | SD | $\bar{X}$ | SD | $\bar{X}$ | SD | $\bar{X}$ | SD | $\bar{X}$ | SD |
| 1 | 5.00 | 2.30 | 5.97 | 2.48 | 6.16 | 1.97 | 6.12 | 2.01 | 5.00 | 2.30 | 5.97 | 2.48 |
| 2 | 3.50 | 1.85 | 5.41 | 2.41 | 5.67 | 1.95 | 5.97 | 2.04 | 3.50 | 1.85 | 5.41 | 2.41 |
| 3 | 3.75 | 2.12 | 5.93 | 2.38 | 6.08 | 2.10 | 6.00 | 2.02 | 3.75 | 2.12 | 5.93 | 2.38 |
| 4 | 5.50 | 2.50 | 6.22 | 2.40 | 6.53 | 2.20 | 6.41 | 2.04 | 5.50 | 2.50 | 6.22 | 2.40 |
| 5 | 6.00 | 1.76 | 6.43 | 2.35 | 6.57 | 2.11 | 6.59 | 2.07 | 6.00 | 1.76 | 6.43 | 2.35 |
| 6 | 6.50 | 1.83 | 6.47 | 2.10 | 6.83 | 1.73 | 6.84 | 2.05 | 6.50 | 1.83 | 6.47 | 2.10 |
| 7 | 4.90 | 2.13 | 5.81 | 2.57 | 6.12 | 2.06 | 6.13 | 2.01 | 4.90 | 2.13 | 5.81 | 2.57 |
| 8 | 6.14 | 2.91 | 5.79 | 2.73 | 6.97 | 1.84 | 6.61 | 1.84 | 6.14 | 2.91 | 5.79 | 2.73 |
| 9 | 6.45 | 1.86 | 6.05 | 2.63 | 6.60 | 1.81 | 6.35 | 2.02 | 6.45 | 1.86 | 6.05 | 2.63 |
| 10 | 6.10 | 2.13 | 5.57 | 2.42 | 6.26 | 2.12 | 6.23 | 2.07 | 6.10 | 2.13 | 5.57 | 2.42 |
| 11 | 5.30 | 2.66 | 6.08 | 2.36 | 6.39 | 2.22 | 6.36 | 2.32 | 5.30 | 2.66 | 6.08 | 2.36 |

| | DEPARTMENT III*** | | | | DEPARTMENT V*** | | | | DEPARTMENT VI*** | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Items | $X_2$ | N=12 | C | N=18 | $X_2$ | N=10 | C | N=18 | $X_2$ | N=102 | C | N=108 |
| | $\bar{X}$ | SD | $\bar{X}$ | SD | $\bar{X}$ | SD | $\bar{X}$ | SD | $\bar{X}$ | SD | $\bar{X}$ | SD |
| 1 | 5.91 | 1.24 | 6.29 | 0.98 | 5.80 | 2.29 | 6.88 | 1.27 | 6.18 | 2.16 | 6.12 | 2.01 |
| 2 | 5.18 | 1.07 | 5.41 | 0.87 | 2.83 | 1.16 | 5.86 | 1.45 | 5.76 | 2.14 | 5.97 | 2.04 |
| 3 | 5.66 | 1.82 | 5.31 | 0.94 | 6.20 | 2.39 | 6.27 | 1.31 | 6.11 | 2.26 | 6.00 | 2.02 |
| 4 | 5.54 | 1.69 | 6.05 | 1.39 | 6.10 | 2.23 | 7.00 | 1.41 | 6.52 | 2.27 | 6.41 | 2.04 |
| 5 | 5.41 | 1.67 | 6.11 | 1.49 | 6.77 | 1.64 | 6.61 | 1.50 | 6.44 | 2.27 | 6.53 | 2.07 |
| 6 | 5.09 | 1.13 | 6.05 | 1.56 | 6.70 | 1.49 | 7.16 | 1.38 | 6.81 | 1.99 | 6.84 | 2.05 |
| 7 | 5.16 | 1.26 | 6.17 | 1.01 | 6.00 | 2.16 | 7.00 | 1.00 | 6.23 | 2.08 | 6.13 | 2.09 |
| 8 | 5.80 | 1.68 | 5.58 | 1.66 | 6.90 | 1.91 | 7.12 | 1.02 | 7.05 | 1.75 | 6.61 | 1.84 |
| 9 | 5.16 | 1.03 | 5.88 | 1.36 | 6.40 | 2.06 | 7.16 | 0.92 | 6.76 | 1.74 | 6.35 | 2.02 |
| 10 | 5.81 | 1.66 | 6.00 | 1.19 | 6.80 | 1.61 | 6.76 | 1.30 | 6.19 | 2.14 | 6.23 | 2.07 |
| 11 | 5.72 | 1.61 | 6.18 | 1.51 | 5.77 | 2.29 | 7.82 | 1.01 | 6.53 | 2.25 | 6.36 | 2.32 |

*Items are listed in Appendix A.

**Departments I & V had no observations for the experimental subgroup. Departments III and IV had insufficient observations for the experimental subgroup of Hypothesis II.

***Departments I and IV had insufficient observations for the experimental subgroup of Hypothesis V.

"other departments" category. Taking the eleven items for the six colleges for a total of sixty-six comparisons, interestingly enough, resulted in thirty-three favoring the controls and thirty-three favoring the experimentals.

When the two subgroups of experimentals were combined for a within college comparison, five of the colleges remained essentially the same. Only college I changed from a 6:5 ratio favoring the controls to a 11:0 ratio in the same direction. (See Table III.)

## SUMMARY

Essentially there were few differences between the groups when compared on a university-wide basis. Some small differences favored the controls within colleges, while a greater number of differences with a wider range of variance favored the controls within departments. In light of these findings the remainder of the analysis is expected to add very little. Exceptionally admitted students do not appear to differ importantly from traditional students in the perceptions of faculty members who know them best. In order to determine whether these differences in the mean scores are greater than could be expected by chance, the data were subjected to t-tests under the six hypotheses.

### The t-Tests

As expected when appraising mean scores, the t-tests of the six hypotheses on the eleven items of the instrument resulted in

TABLE III

MEANS AND STANDARD DEVIATIONS ON THE ELEVEN ITEMS FOR EXPERIMENTAL SUBGROUPS AND THE CONTROL GROUP BY COLLEGES: (HYPOTHESES 3 AND 4*)

| | COLLEGE I | | | | | | COLLEGE II | | | | | | COLLEGE III | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Items | $X_1$ | N=4 | $X_2$ | N=12 | C | N=34 | $X_1$ | N=12 | $X_2$ | N=12 | C | N=38 | $X_1$ | N=16 | $X_2$ | N=40 | C | N=36 |
| | $\bar{X}$ | SD | $\bar{X}$ | SD | $\bar{X}$ | SD | $\bar{X}$ | SD | $\bar{X}$ | SD | $\bar{X}$ | SD | $\bar{X}$ | SD | $\bar{X}$ | SD | $\bar{X}$ | SD |
| 1 | 7.75 | 0.50 | 6.75 | 1.65 | 7.05 | 1.55 | 5.00 | 2.30 | 5.00 | 2.30 | 5.97 | 2.48 | 6.18 | 1.16 | 6.10 | 1.69 | 6.72 | 1.34 |
| 2 | 6.00 | 3.46 | 6.00 | 2.32 | 7.17 | 1.54 | 3.50 | 1.85 | 3.50 | 1.85 | 5.41 | 2.41 | 5.56 | 1.20 | 5.25 | 1.82 | 5.91 | 1.41 |
| 3 | 7.75 | 0.95 | 6.25 | 2.17 | 7.26 | 1.54 | 3.75 | 3.13 | 3.75 | 2.12 | 5.93 | 2.38 | 5.87 | 1.20 | 6.12 | 1.78 | 6.00 | 1.44 |
| 4 | 6.00 | 2.64 | 5.63 | 2.24 | 7.26 | 1.69 | 5.50 | 3.50 | 5.50 | 2.50 | 6.22 | 2.40 | 6.43 | 1.59 | 6.30 | 1.88 | 6.67 | 1.41 |
| 5 | 5.33 | 3.05 | 5.27 | 2.05 | 7.23 | 1.67 | 6.00 | 1.76 | 6.00 | 1.76 | 6.43 | 2.35 | 6.43 | 1.75 | 6.43 | 1.77 | 6.72 | 1.58 |
| 6 | 7.50 | 1.29 | 6.83 | 1.69 | 7.41 | 1.49 | 6.50 | 1.83 | 6.50 | 1.83 | 6.47 | 2.10 | 6.75 | 1.48 | 6.48 | 1.68 | 7.03 | 1.53 |
| 7 | 6.50 | 1.73 | 6.08 | 1.88 | 7.17 | 1.52 | 4.90 | 2.13 | 4.90 | 2.13 | 5.81 | 2.57 | 5.87 | 1.50 | 5.97 | 1.76 | 6.75 | 1.31 |
| 8 | 8.00 | 1.41 | 7.10 | 1.19 | 7.15 | 1.62 | 6.14 | 2.91 | 6.14 | 2.91 | 5.79 | 2.73 | 7.12 | 1.20 | 6.86 | 1.56 | 6.73 | 1.65 |
| 9 | 7.50 | 1.29 | 7.00 | 1.70 | 7.26 | 1.74 | 6.45 | 1.86 | 6.45 | 1.86 | 6.05 | 2.63 | 6.62 | 1.40 | 6.40 | 1.70 | 6.76 | 1.36 |
| 10 | 4.00 | 0.00 | 6.28 | 1.70 | 7.00 | 1.35 | 6.10 | 2.13 | 6.10 | 2.13 | 5.57 | 2.42 | 6.37 | 1.36 | 6.48 | 1.51 | 6.51 | 1.27 |
| 11 | 7.00 | 1.41 | 6.66 | 1.96 | 7.10 | 1.60 | 5.30 | 2.66 | 5.30 | 2.66 | 6.08 | 2.36 | 6.43 | 1.50 | 6.34 | 1.84 | 7.15 | 1.44 |

| | COLLEGE IV | | | | | | COLLEGE V | | | | | | COLLEGE VI | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Items | $X_1$ | N=10 | $X_2$ | N=10 | C | N=30 | $X_1$ | N=14 | $X_2$ | N=30 | C | N=36 | $X_1$ | N=14 | $X_2$ | N=20 | C | N=26 |
| | $\bar{X}$ | SD | $\bar{X}$ | SD | $\bar{X}$ | SD | $\bar{X}$ | SD | $\bar{X}$ | SD | $\bar{X}$ | SD | $\bar{X}$ | SD | $\bar{X}$ | SD | $\bar{X}$ | SD |
| 1 | 6.30 | 2.40 | 6.30 | 2.40 | 5.80 | 2.09 | 6.14 | 2.31 | 6.63 | 2.15 | 6.06 | 1.91 | 6.07 | 1.77 | 5.45 | 2.50 | 6.07 | 2.03 |
| 2 | 6.30 | 1.82 | 6.30 | 1.82 | 5.70 | 2.18 | 6.21 | 2.11 | 6.50 | 2.17 | 6.08 | 1.86 | 5.78 | 1.76 | 5.20 | 2.39 | 5.95 | 2.10 |
| 3 | 6.50 | 2.50 | 6.50 | 2.50 | 5.41 | 2.39 | 6.64 | 2.02 | 7.06 | 1.76 | 6.44 | 2.07 | 5.58 | 2.10 | 5.00 | 2.65 | 6.23 | 2.07 |
| 4 | 7.50 | 1.50 | 7.50 | 1.50 | 5.75 | 2.48 | 6.92 | 1.94 | 7.06 | 1.96 | 6.86 | 1.82 | 6.58 | 2.31 | 5.88 | 2.75 | 6.66 | 2.11 |
| 5 | 7.10 | 2.28 | 7.10 | 2.28 | 5.71 | 2.47 | 7.00 | 1.22 | 7.14 | 1.86 | 6.77 | 1.89 | 6.25 | 2.37 | 5.55 | 2.89 | 6.94 | 1.80 |
| 6 | 6.60 | 1.57 | 6.60 | 1.57 | 6.34 | 2.45 | 7.38 | 1.19 | 7.32 | 1.63 | 6.91 | 1.78 | 7.00 | 2.00 | 6.00 | 2.82 | 6.61 | 2.30 |
| 7 | 6.10 | 2.28 | 6.10 | 2.28 | 5.31 | 2.45 | 6.71 | 1.93 | 6.86 | 1.85 | 6.41 | 1.90 | 6.07 | 1.77 | 6.00 | 2.05 | 6.34 | 2.03 |
| 8 | 6.50 | 2.50 | 6.50 | 2.50 | 6.24 | 2.11 | 6.92 | 1.63 | 7.30 | 1.51 | 7.36 | 1.38 | 7.33 | 1.77 | 6.94 | 1.83 | 6.21 | 2.04 |
| 9 | 6.20 | 2.25 | 6.20 | 2.25 | 5.86 | 2.08 | 6.78 | 1.80 | 7.06 | 1.52 | 6.58 | 1.96 | 7.00 | 1.46 | 6.95 | 1.53 | 6.62 | 2.20 |
| 10 | 6.60 | 2.54 | 6.60 | 2.54 | 5.51 | 2.73 | 6.76 | 1.78 | 6.76 | 1.66 | 6.53 | 2.09 | 6.08 | 2.46 | 5.50 | 2.83 | 6.72 | 1.87 |
| 11 | 6.20 | 2.82 | 6.20 | 2.82 | 5.60 | 2.69 | 6.61 | 2.06 | 7.03 | 1.97 | 6.82 | 2.09 | 6.28 | 2.19 | 5.89 | 2.66 | 7.25 | 1.99 |

*College VII had insufficient observations for the control group.

few significant differences between the experimental students (divided into the two subgroups of those admitted below the previous University-wide minimum of a 2.5 gpa in the junior-senior years of undergraduate education and those admitted who were below particular department requirements) and the controls (those admitted above the 2.5 average and all other particular minimum department criteria). Though a few differences were found, the number of these was not much more than that expected by probability. Also, recall that even where differences were significant, the magnitude of those differences was small. (See Appendix B for a discussion of t-test findings.) The differences for the subgroup of below 2.5 students and the regular students were also small. (See Table I.)

## Factor Analysis

The next step in analyzing the data was to perform a factor analysis on the responses to the eleven items in order to increase interpretability of the instrument. The factor analysis revealed that all eleven items were measuring essentially the same thing and therefore that the instrument was unidimensional.* Hence, comparison of groups on the single factor greatly simplifies interpretation of the findings with little apparent loss of sensitivity.

---

*A single factor, with an eigenvalue of 8.97 and factor loadings all above .83, explained 81.55 percent of the total variance. A second factor explained only an additional 5.53 percent of the variance with an eigenvalue well below 1.0--.61. (See Table VI, Appendix B.)

Standardized group mean scores on the composite factor were compared using t-tests according to the six hypotheses. No significant differences were found. Detailed findings are presented in Appendix C.

The most informative results revealed that exceptionally admitted students were perceived by knowledgeable faculty to be approximately equal in ability and achievement to regularly admitted students. Raw mean scores on each of the eleven items of the rating instrument, statistical tests of the means of the eleven items, and statistical tests of standardized group mean factor scores indicated near-equal appraisals of both kinds of students. This was true for the University as a whole and for individual colleges and departments considered separately.

## CONCLUSIONS

On the basis of this study the changes in graduate admissions policies at The Pennsylvania State University do not appear to adversely affect the quality of graduate programs. Since the new procedures specify the departments as the admitting units and the differences between the experimentals and controls were indeed small, it would suggest that the departments are capable of selecting students who fail to meet certain department standards but nonetheless perform acceptably in the programs. Even where there is some evidence that exceptionally admitted students are perceived less favorably by faculty members, the differences are so small that they are almost negligible.

Therefore, the evidence suggests continuation of the new policy.

To be sure, faculty perceptions are but one criterion for assessing graduate students' capabilities and achievements. Nevertheless, since it is ultimately the faculty who largely determine the success or failure of graduate students -- and usually by some equally subjective judgements -- faculty perceptions are valid measures. As time passes and other criteria become available, more complete appraisals of the change in graduate admissions procedures at The Pennsylvania State University will become possible. For example, grades earned in courses, success in comprehensive examinations, and success in completing degree programs will be valuable indexes of success. Follow-up studies of graduates could yield even more valid evaluations. For the time being, however, faculty views suffice.

Perhaps, if the results of this study were internally conflicting or were at odds with published accounts of similar investigations, the single criterion of faculty appraisal would arouse more skepticism. However, both the internal consistency of the findings and the consistency with previous research are clearly compatible. From this and previous research, success in graduate study does not appear to be predictable from undergraduate grade point averages, nor does it appear to be predictable on the basis of other standard criteria used by the respective departments of the University. Even when differences do favor the regularly admitted student over the

exceptionally admitted, the size of the advantage is exceedingly small.

Traditional graduate admissions policies do not appear to serve their ostensible purposes. They do not seem to afford substantial efficiencies to society by restricting graduate education to those most likely to benefit. Perhaps they do, or at least historically did, however, restrict persons from certain social, racial, or economic backgrounds. It would appear that institutions of higher education are coming to that conclusion. In the absence of some otherwise compelling evidence, equal consideration of all applicants would seem to be a wise policy.

## APPENDIX A


# THE PENNSYLVANIA STATE UNIVERSITY

CENTER FOR THE STUDY OF HIGHER EDUCATION
110 WILLARD BUILDING
UNIVERSITY PARK, PENNSYLVANIA 16802

Area Code 814
865-0312


January 11, 1971

Dear Faculty Member:

We need your help in fulfilling a charge given to the Graduate School by the Graduate Admissions Committee. Our concern has to do with the relative success that certain student typologies encounter as graduate students at Penn State.

Would you, therefore, please complete the enclosed form(s) for the student(s) indicated at the top of the form? No more than five minutes should be necessary to complete each instrument.

Thank you.

James B. Bartoo
Dean of the Graduate School

Larry L. Leslie
Research Associate
Center for the Study
of Higher Education

JBB/LLL/fz

Enclosure

STUDENT EVALUATION FORM

1. - 3. Students. Name _____

7. How familiar are you with this student's academic performance (as a graduate student at Penn State) or other characteristics that you believe are important to his status as a graduate student?

1. Almost totally unfamiliar _____
2. Vaguely familiar _____
3. Modestly familiar _____
4. Quite familiar _____
5. Very familiar _____

INSTRUCTIONS: Rank this student in comparison to other recent graduate students (at the same stage in the program) who have worked on equivalent degrees in your department. Rank him by checking the percentile within which he falls.

| | Bottom 10% | 11th-20th %ile | 21st-30th %ile | 31st-40th %ile | 41st-60th %ile | 61st-70th %ile | 71st-80th %ile | 81st-90th %ile | Top 10% |
|---|---|---|---|---|---|---|---|---|---|
| 11. Mastery of the fundamental knowledge in his major field. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 12. Knowledge of and ability to use the basic research techniques in his field. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 13. A fertile imagination and originality in his field. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 14. Self-reliance and independence in scholarly work. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

| | Bottom 10% | 11th-20th %ile | 21st-30th %ile | 31st-40th %ile | 41st-60th %ile | 61st-70th %ile | 71st-80th %ile | 81st-90th %ile | Top 10% |
|---|---|---|---|---|---|---|---|---|---|
| 15. Motivation toward productive scholarly work. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 16. Emotional stability and maturity. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 17. How do you rate him in General All-around Scholarly Ability. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 18. How well he interacts with his fellow students. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 19. Skill in expressing himself in speech and writing. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 20. Development since you have known him. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 21. Performance in your class. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

| | Yes | No |
|---|---|---|
| 22. Did we err in admitting him. | | |

COMMENTS: _____

_____

_____

_____

Your Signature _____

## Appendix B

The investigators hesitate to present these t-test findings for fear that they will be misinterpreted. The reader is advised to remember that although some significant differences were found, for the two general groups, the magnitude of the differences was very small -- exceeding .30 on a 1.0 to 10.0 scale on only one of eleven items. The large number of subjects caused findings to be statistically significant even though differences were small. The reader is asked to keep these points in mind.

For hypothesis 1, calling for a comparison of the below 2.5 experimental subjects with the traditional control subjects, on only one item, "knowledge of and ability to use the basic research techniques in his field," were differences significant ($.010 < P < .025$). The mean score for the regular students was higher.

Hypothesis 2 compared the below 2.5 subjects with the control subjects after both groups had been categorized by department. With minor exceptions, the differences within departments between these two groups were not found to be significant. The differences between the below 2.5 gpa students and the traditionally admitted students by department revealed that "a knowledge of and ability to use basic research techniques in his field" ($.025 < P < .050$) and "imagination and originality in his field" ($.010 < P < .025$) were the only two items on which significant differences were found -- and these in only one

department. Another three departments showed no significant differences on any of the items, while the two other departments did not contain adequate numbers of subjects for testing.

When categorized by colleges to test hypothesis 3 (the below 2.5 experimentals with the controls), only college II had items (two) on which group differences were significant. Mean scores again favored the regular students. These items were the same two, "knowledge of and ability to use basic research techniques in his field" ($.025<P<.050$) and "imagination and originality in his field" ($.010<P<.025$). Differences significantly favored regular students on the item, "All-around scholastic ability" ($.025<P<.050$) in college III. On "self-reliance and independence in scholarly work" mean scores favored the exceptionally admitted students ($.025<P<.050$) in college IV. Colleges V and VI revealed no significant differences between groups, and college VII had inadequate numbers for testing. (See Table IV.) The sum of significant t values approximated that which could be expected by probability for this number of t-tests performed at this level of significance.

The next three hypotheses compared the entire group of experimental subjects (both below 2.5 gpa's and above 2.5 but below particular department criteria) with the control subjects (above all particular department requirements). Hypothesis 4 compared the experimentals and controls as complete groups again as in hypothesis 1. In this instance only one item, "a knowledge of and ability to use the basic research techniques in

TABLE IV

SIGNIFICANT AND NONSIGNIFICANT t VALUES FOR THE ELEVEN ITEMS BY EXPERIMENTAL AND CONTROL GROUPS ON THE SIX HYPOTHESES

| | HYPOTHESIS 1 | HYPOTHESIS 2 DEPARTMENT | | | | | | HYPOTHESIS 3 COLLEGE | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ITEMS | UNIVERSITY WIDE | I | II | III | IV | V | VI | I | II | III | IV | V | VI | VII |
| 1 | NON | N/T | NON | NON | SIG | N/T | NON | N/T | NON | NON | NON | NON | NON | N/T |
| 2 | SIG | N/T | SIG | NON | NON | N/T | NON | N/T | SIG | NON | NON | NON | NON | N/T |
| 3 | NON | N/T | SIG | NON | NON | N/T | NON | N/T | SIG | NON | NON | NON | NON | N/T |
| 4 | NON | N/T | NON | NON | NON | N/T | NON | N/T | NON | NON | SIG | NON | NON | N/T |
| 5 | NON | N/T | NON | NON | NON | N/T | NON | N/T | NON | NON | NON | NON | NON | N/T |
| 6 | NON | N/T | NON | NON | NON | N/T | NON | N/T | NON | NON | NON | NON | NON | N/T |
| 7 | NON | N/T | NON | NON | NON | N/T | NON | N/T | NON | SIG | NON | NON | NON | N/T |
| 8 | NON | N/T | NON | NON | NON | N/T | NON | N/T | NON | NON | NON | NON | NON | N/T |
| 9 | NON | N/T | NON | NON | NON | N/T | NON | N/T | NON | NON | NON | NON | NON | N/T |
| 10 | NON | N/T | NON | NON | NON | N/T | NON | N/T | NON | NON | NON | NON | NON | N/T |
| 11 | NON | N/T | NON | NON | NON | N/T | NON | N/T | NON | NON | NON | NON | NON | N/T |

| | HYPOTHESIS 4 | HYPOTHESIS 5 DEPARTMENT | | | | | | HYPOTHESIS 6 COLLEGE | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ITEMS | UNIVERSITY WIDE | I | II | III | IV | V | VI | I | II | III | IV | V | VI | VII |
| 1 | NON | N/T | NON | NON | N/T | NON | NON | NON | NON | SIG | NON | NON | NON | N/T |
| 2 | SIG | N/T | SIG | NON | N/T | SIG | NON | NON | SIG | NON | NON | NON | NON | N/T |
| 3 | NON | N/T | SIG | NON | N/T | NON | NON | NON | SIG | NON | NON | NON | NON | N/T |
| 4 | NON | N/T | NON | NON | N/T | NON | NON | SIG | NON | NON | SIG | NON | NON | N/T |
| 5 | NON | N/T | NON | NON | N/T | NON | NON | SIG | NON | NON | NON | NON | NON | N/T |
| 6 | NON | N/T | NON | NON | N/T | NON | NON | NON | NON | NON | NON | NON | NON | N/T |
| 7 | NON | N/T | NON | SIG | N/T | NON | NON | NON | NON | SIG | NON | NON | NON | N/T |
| 8 | NON | N/T | NON | NON | N/T | NON | NON | NON | NON | NON | NON | NON | NON | N/T |
| 9 | NON | N/T | NON | NON | N/T | NON | NON | NON | NON | NON | NON | NON | NON | N/T |
| 10 | NON | N/T | NON | NON | N/T | NON | NON | NON | NON | NON | NON | NON | NON | N/T |
| 11 | NON | N/T | NON | NON | N/T | SIG | NON | NON | NON | SIG | NON | NON | NON | N/T |

HYPOTHESES:

1. There are no differences in student performance between students who are admitted to graduate programs with less than a 2.5 gpa in their junior-senior undergraduate years and those who are admitted with greater than a 2.5 gpa.
2. There are no differences within departments in student performance between students who are admitted to graduate programs with less than 2.5 gpa's in their junior-senior years and those who are admitted with greater than 2.5 gpa's.
3. There are no differences within colleges in student performance between students who are admitted to graduate programs with less than 2.5 gpa's in their junior-senior years and those who are admitted with greater than 2.5 gpa's.
4. There are no differences in student performance between students who are admitted to graduate programs on the basis of special exceptions to department admissions standards and those who are not special exceptions to department standards.
5. There are no differences within departments in student performance between students who are admitted to graduate programs on the basis of special exceptions to department admissions standards and those who are not special exceptions to department standards.
6. There are no differences within colleges in student performance between students who are admitted to graduate programs on the basis of special exceptions to department standards.

SIG=Significant at p .05
NON=Not Significant
N/T=Not Tested: Insufficient Number of Observations
*See Appendix A, pp. 2 & 3

his field," revealed significant differences ($.010<P<.025$) between the groups. The direction of the difference favored the control subjects.

Hypothesis 5 tested the same experimental and control groups categorized by departments. Two departments showed significant group differences on two of the eleven items and two other departments disclosed one statistically significant item. Differences favored the control group in all four cases. "A knowledge of and ability to use the basic research techniques in his field" ($.025<P<.050$) and a "fertile imagination and originality in his field" ($.010<P<.025$) were the significant items for department II. "General all-around scholarly ability" ($.010<P<.025$) was the only item yielding significant differences for the groups within department III. The experimental and control groups differed significantly on "basic research techniques" ($.001<P<.010$) and "class performance" ($.001<P<.010$) in department V.

The t-tests of hypothesis 6 measuring the differences within colleges between the two subgroups of the experimental group taken together and the total control group, revealed three items on which the groups were significantly different in college III: "mastery of fundamental knowledge" ($.025<P<.050$), "General all-around scholarly ability" ($.010<P<.025$), and "class performance" ($.010<P<.025$). Two different items revealed differences in

colleges I and II. In college I group differences were significant on "self-reliance and independence in scholarly work" ($.010<P<.025$) and "motivation toward productive scholarly work" ($.001<P<.010$). In college II "basic research techniques" ($.025<P<.050$) and "imagination and originality in his field" ($.010<P<.025$) were the items of significance. The results of the t-tests for college IV revealed significant differences for only one item, i.e., "self-reliance and independence in scholarly work" ($.025<P<.050$). In only this last case did the experimental group have a higher score. In colleges V and VI group differences were not significant on any items, and the differences within college VII were not compared because of inadequate numbers of subjects for testing.

For the most part, then, an analysis of the raw data resulted in relatively few significant differences in the performances of the two groups of students as rated by faculty -- regardless of how the experimental students were grouped. However, even the differences that do exist are for the most part inconsequential, due to their small magnitude.

# Appendix C

A factor analysis "summarizes" data. It collapses responses to the items of an instrument or those of several instruments. This can result in the need to consider only a few findings rather than many, possibly contradictory findings (as found above). These "summarized" results follow.

Hypothesis 1 tested the differences between the experimental subjects with less than a 2.5 grade point average against the control subjects, who were all above 2.5 and any other particular department requirements. The t value was 0.720 and was not significant.

The second hypothesis compared the same groups (experimental subjects below 2.5 with control subjects above all particular department requirements) categorizing them by departments. However, due to the small numbers of experimental subjects, the t-tests were not computed for five departments. Therefore, only their means and standard errors are reported in Table V. The sixth category, all other departments combined, had adequate numbers of subjects and was tested, resulting in a t value of -0.674, which was not significant.

For hypothesis 3, measuring the below 2.5 experimental subjects against the entire control group by colleges, the differences within colleges were tested. Five of the seven

TABLE V

COMPOSITE FACTOR MEANS AND
STANDARD ERRORS SQUARED FOR ALL GROUPS

| | UNIVERSITY WIDE | | | DEPARTMENTS I | | | II | | | III | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $X_1$N=82 | $X_2$N=140 | C N=198 | $X_1$N=3 | $X_2$N=6 | C N=20 | $X_1$N=9 | $X_2$N=9 | C N=37 | $X_1$N=2 | $X_2$N=11 | C N=16 |
| MEAN | -0.52 | -0.73 | 0.36 | 0.00 | -0.16 | 0.63 | -0.70 | -0.70 | -0.21 | -0.61 | -0.50 | -0.19 |
| STANDARD ERROR SQUARED | 0.10 | 0.69 | 0.45 | 0.00 | 0.15 | 0.16 | 0.97 | 0.97 | 0.40 | 0.13 | 0.40 | 0.11 |

| | DEPARTMENTS IV | | | V | | | VI | | |
|---|---|---|---|---|---|---|---|---|---|
| | $X_1$N=2 | $X_2$N=6 | C N=18 | $X_1$N=3 | $X_2$N=10 | C N=18 | $X_1$N=69 | $X_2$N=98 | C N=89 |
| MEAN | -0.22 | 0.58 | 0.30 | 0.00 | -0.16 | 0.25 | 0.53 | 0.72 | -0.49 |
| STANDARD ERROR SQUARED | 0.92 | 0.80 | 0.36 | 0.00 | 0.90 | 0.15 | 0.12 | 0.10 | 0.10 |

| | COLLEGES I | | | II | | | III | | | IV | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $X_1$N=3 | $X_2$N=11 | C N=34 | $X_1$N=9 | $X_2$N=9 | C N=37 | $X_1$N=16 | $X_2$N=39 | C N=54 | $X_1$N=10 | $X_2$N=10 | C N=29 |
| MEAN | 0.12 | -0.67 | 0.41 | -0.70 | -0.70 | -0.21 | -0.37 | -0.86 | 0.15 | 0.68 | 0.68 | -0.35 |
| STANDARD ERROR SQUARED | 0.25 | 0.62 | 0.14 | 0.97 | 0.97 | 0.40 | 0.27 | 0.16 | 0.66 | 0.14 | 0.14 | 0.47 |

| | COLLEGES V | | | VI | | | VII | | |
|---|---|---|---|---|---|---|---|---|---|
| | $X_1$N=14 | $X_2$N=29 | C N=28 | $X_1$N=12 | $X_2$N=18 | C N=14 | $X_1$N=18 | $X_2$N=24 | C N=2 |
| MEAN | 0.17 | 0.29 | 0.12 | 0.34 | -0.26 | 0.23 | -0.76 | -0.17 | -0.66 |
| STANDARD ERROR SQUARED | 0.51 | 0.25 | 0.31 | 0.92 | 0.83 | 0.61 | 0.58 | 0.54 | 0.00 |

college categories contained adequate numbers for testing. (See Table V for means and standard errors of the other two colleges.) The t value for college II was 1.310, which was not statistically significant. The t value for college III was 1.021 and was not significant. College IV revealed a t of -.0986, which was not significant. The t value for college V was found to be -0.182, not significant; and the t value for college VI was -0.083 and was also not significant.

Without any subdivision, hypothesis 4 compared the experimentals and controls with each other as complete groups. The t value was 1.028; it was not significant.

For hypothesis 5, the two major groups were again categorized by departments, and, where the number of subjects was adequate, t-tests were performed. Four of the six departments were so tested. (See Table V for the means and standard errors of the other two departments whose numbers were inadequate.) The t value for department II was 1.310, which was not significant. For department III it was 1.375 and was nonsignificant. Department V showed a t value of 1.295 and was not significant, while department VI disclosed a t value of -0.390, also not significant.

Hypothesis 6 compared the two complete groups categorized by colleges. Only one of the seven colleges did not provide enough data for testing. Means and standard errors are reported in Table VI. The t value for college I was 1.740 and

TABLE VI

ITEM FACTOR LOADINGS

(EIGENVALUE 8.97040)

| ITEM | FACTOR LOADING |
|---|---|
| 1 | 0.89655 |
| 2 | 0.90892 |
| 3 | 0.91736 |
| 4 | 0.92905 |
| 5 | 0.87848 |
| 6 | 0.88771 |
| 7 | 0.94491 |
| 8 | 0.83299 |
| 9 | 0.85615 |
| 10 | 0.93629 |
| 11 | 0.93791 |

and was not significant. For college II it was a nonsignificant value of 1.310. College III reported a 1.555 t, not significant. College IV's results were a t value of -0.986 and was not significant. The difference for college V was not significant with a t value of -0.703; and differences within college VI, with a t value of 0.712, were likewise nonsignificant. Overall, there appeared to be no marked differences on any of the six hypotheses using either raw data or the composite factor.

# BIBLIOGRAPHY


Campbell, David C. "Admissions Policies: Side Effects and Their Implications." *American Psychologist* 26 (1971): 636-648.

Carlisle, Donald. *The Disadvantaged Student in Graduate School Master's and Doctoral Degree Programs in Predominately Non-Negro Universities.* Los Angeles: University of California, 1968.

Council of Graduate Schools in the United States, Washington, D.C. *Programs for Disadvantaged Students in Graduate Schools.* Princeton, New Jersey: Educational Testing Service, 1970.

Davis, William G., and Welty, Gordon A. *The Old Systems and the New College Students.* Oberlin, Ohio: American College Personnel Association, 1970.

Fleury, Bernard J., and Cappolluzzo, Emma M. *Educational Research Training Programs: Requirements for Admission.* Massachusetts School of Education, University of Massachusetts, 1969.

Graduate School Bulletin. University Park, Pennsylvania: The Pennsylvania State University, May 2, 1969.

Heiss, Ann M. *Challenges to Graduate Schools.* San Francisco: Jossey-Bass, Inc., 1970.

Howard, Lawrence C. *Graduate Education for the Disadvantaged and Black-Oriented University Graduates.* Washington, D.C.: Council of Graduate Schools in the United States, 1968.

Iffert, Robert E. *Retention and Withdrawal of College Students.* Bulletin 1. Washington, D.C.: U.S. Office of Education, 1958.

Leslie, Larry L. "Obtaining Response Rates to Long Questionnaires." *Journal of Educational Research* (1970): 345-350.

Marston, Albert R. "It Is Time to Reconsider the Graduate Record Examination." *American Psychologist* 26 (1971): 653-656.

Stahmer, Harold M. *The Disadvantaged Student in Graduate School.* The Harvard-Yale-Columbia Intensive Summer Studies Program. Washington, D.C.: Council of Graduate Schools, 1968.

Tucker, Allen; Gottlieb, David; and Pease, John. *Attrition of Graduate Students at the Ph.D. Level in the Traditional Arts and Sciences.* Publication 8. Michigan State University: Office of Research and Development and the Graduate School, 1964.

# Notes on the Authors

MANUEL G. GUNNE is Acting Academic Coordinator for the Educational Opportunity Program. He earned an M.Ed. in counseling and personnel services from the University of Maryland and is currently completing work on a D.Ed. in higher education. Mr. Gunne has taught secondary English and literature and held various positions as counselor, acting judicial director, advisor, and registrar.

LARRY L. LESLIE holds a joint appointment at The Center for the Study of Higher Education and in the College of Education, where he is chairman and associate professor of higher education. Dr. Leslie earned an Ed.D. from the University of California at Berkeley. He has served as a consultant to the Office of Economic Opportunity, the Title III Office of the State of Wyoming, the Utah State Board of Education, and the Committee for Economic Development.

## Center for the Study of Higher Education

## The Pennsylvania State University

The Center for the Study of Higher Education was established in January 1969 to study higher education as an area of scholarly inquiry and research. Dr. G. Lester Anderson, its director, is aided by a staff of twenty, including five full-time researchers, and a cadre of advanced graduate students and supporting staff.

The Center's studies are designed to be relevant not only to the University and the Commonwealth of Pennsylvania, but also to colleges and universities throughout the nation. The immediate focus of the Center's research falls into the broad areas of governance, graduate and professional education, and occupation programs in two-year colleges.

Research reports, monographs, and position papers prepared by staff members of the Center can be obtained on a limited basis. Inquiries should be addressed to the Center for the Study of Higher Education, 101 Rackley Building, The Pennsylvania State University, University Park, Pennsylvania 16802.

# Selected Publications Available From The Center For The Study of Higher Education

## Monographs

*Pennsylvania Community College Faculty -- Attitudes Toward Collective Negotiations*, John W. Moore, and *Career Patterns and Educational Issues*, Robert A. Patterson, May 1971.

*Institutional Self-Study at The Pennsylvania State University*, Kenneth P. Mortimer and David W. Leslie (eds.), December 1970.

## Numbered Reports

*The Quality of Graduate Studies: Pennsylvania and Selected States*, Stephen D. Millman and William Toombs, February 1972, Report No. 14.

*Goals and Ambivalence: Faculty Values and The Community College Philosophy*, Karen L. Bloom, Angelo C. Gillie, and Larry L. Leslie, November 1971, Report No. 13.

*Governance and Emerging Values in Higher Education*, Kenneth P. Mortimer, Stanley O. Ikenberry, and G. Lester Anderson, September 1971, Report No. 12.

*The Academic Senate at The Pennsylvania State University*, Kenneth P. Mortimer and David W. Leslie, August 1971, Report No. 11.

*Professional Education: Some Perspectives, 1971*, Larry L. Leslie, Kenneth P. Mortimer, and G. Lester Anderson, August 1971, Report No. 10.

*Centers and Institutes at The Pennsylvania State University: A Case Study*, Mary M. Norman, March 1971, Report No. 9.

*New Careers in Human Services: A Challenge to the Two-Year College* (A Preliminary Report), Martha A. Burns, March 1971, Report No. 8.

*The Academy and General Education*, Stanley O. Ikenberry, December 1970, Report No. 7.

*A Profile of Proliferating Institutes: A Study of Selected Characteristics of Institutes and Centers in 51 Land Grant Universities*, Stanley O. Ikenberry, November 1970, Report No. 6.

*Roles and Structures for Participation in Higher Education Governance: A Rationale*, Stanley O. Ikenberry, August 1970, Report No. 5.

## Conference Reports

*The Second Annual Pennsylvania Conference on Post-Secondary Occupational Education*, Angelo C. Gillie, June 1970.

*Post-Secondary Occupational Education: An Overview and Strategies*, Angelo C. Gillie, January 1970.

## Bibliographies

*The Black Student in Higher Education: A Bibliography*, W. Frank Hull IV, November 1969, Number 3.

*Student Unrest on the American Campus: A Bibliography*, David W. Leslie, November 1969, Number 2.

U.Ed. 2-603